

CLAIMS

What is claimed is:

1. A method for determining a data rate for a digital data stream comprising a plurality of pulses, each pulse having a width, the method comprising:
 - directly measuring the width of each pulse from the plurality of pulses by a measuring cell utilizing RC time constants wherein each pulse width is represented by a measured width voltage; and
 - transferring said measured width voltage to a measurement node wherein said measurement node determines the measured width voltage of the minimum pulse width.
2. A method for determining a data rate for a digital data stream comprising a plurality of pulses, each pulse having a width, the method comprising:
 - directly measuring the width of each pulse from the plurality of pulses by a measuring cell utilizing RC time constants wherein each pulse width is represented by a measured width voltage;
 - transferring said measured width voltage to a measurement node wherein said measurement node determines the measured width voltage of the minimum pulse width;
 - converting the measured width voltage of the minimum pulse width from an analog to a digital value; and
 - determining a range within which the digital value falls, each range being associated with a different data rate.
3. A method for determining a data rate for a digital data stream, the digital data stream comprising a plurality of pulses, each pulse having a width, the method comprising:
 - measuring the width of each pulse from the plurality of pulses;

determining a minimum pulse width for the plurality of pulses; and
using the minimum pulse width to infer the data rate.

4. The method of claim 3 wherein the step of measuring the width of each pulse
from the plurality of pulses comprises the substeps of:

causing a change of voltage across a capacitor for a duration of the pulse resulting in a
voltage level of the capacitor for the pulse; and
measuring the voltage level of the capacitor.

5. The method of claim 4 wherein the step of determining the minimum pulse width
for the plurality of pulses comprises the substep of:

determining a maximum voltage level for the plurality of pulses.

6. The method of claim 3 wherein the step of using the minimum pulse width to
infer the data rate comprises the substep of:

converting the minimum pulse width to a digital signal.

7. The method of claim 6 wherein the step of using the minimum pulse width to
infer the data rate further comprises the substep of:

determining a range of values within which the digital value falls, each range indicating a
different data rate.

8. A system for determining a data rate for a digital data stream, the digital data
stream comprising a plurality of pulses, each pulse having a width, the system comprising:

a plurality of measuring cells for measuring the width of a pulse from the plurality of
pulses; and

a measurement node for determining a minimum pulse width for the plurality of pulses.

1 9. The system of claim 8 wherein each measuring cell of the plurality of measuring
2 cells comprises:

3 a RC circuit for producing a measured width voltage having a value related to the
4 duration of the pulse.

1 10. The system of claim 9 wherein each measuring cell of the plurality of measuring
2 cells further comprises: a pulse switch activated by a pulse of the digital data stream, the switch
3 being connected to the RC circuit for causing a change of voltage to occur across the capacitor
4 for the pulse duration, resulting in a measured width voltage for that pulse.

1 11. The system of claim 10 wherein each measuring cell of the plurality of measuring
2 cells further comprises a transfer switch connected to the RC circuit for transferring upon
3 activation the measured width voltage to the measurement node.

1 12. The system of claim 11 wherein each measuring cell of the plurality of measuring
2 cells further comprises a switch connected to the RC circuit for setting the voltage across the
3 capacitor in the RC circuit to a predetermined level when a pulse duration is not being measured.

1 13. The system of claim 12 wherein one or more of the switches are embodied as
2 analog metal oxide semiconductor field effect transistors (MOSFETs).

1 14. The system of claim 8 wherein the measurement node determines a maximum
2 voltage for the plurality of pulses.

1 15. The system of claim 8 further comprising a timing controller for sequencing the
2 plurality of measuring cells for measuring the widths of the plurality of pulses.

1 16. The system of claim 10 further comprising:
2 an analog to digital converter for converting the measured width voltage associated with
3 the minimum pulse width to a digital value.

1 17. A system for determining a data rate for a digital data stream, the digital data
2 stream comprising a plurality of pulses, each pulse having a width, the system comprising:
3 a plurality of measuring cells for measuring the width of a pulse from the plurality of
4 pulses;
5 a measurement node for determining a minimum pulse width for the plurality of pulses;
6 a RC circuit for producing a measured width voltage having a value related to the
7 duration of the pulse;
8 a timing controller for sequencing the plurality of measuring cells for measuring the
9 widths of the plurality of pulses;
10 an analog to digital converter for converting the measured width voltage associated with
11 the minimum pulse width to a digital value; and
12 a processor having access to the digital value and to a memory comprising a lookup table
13 having ranges of values, each range being associated with a different data rate, wherein said
14 processor determines the data rate by reading ranges from the lookup table to determine the range
15 within which the digital value falls.